WHAT IS CLAIMED IS:

1. An ultrasonic vibration element comprising:

a single-crystal piezoelectric member cut like an array; and

at least one of an upper resin layer formed on an upper surface of the piezoelectric member and having smaller acoustic impedance than the piezoelectric member, and a lower resin layer formed on a lower surface of the piezoelectric member and having smaller acoustic impedance than the piezoelectric member, wherein

the at least one of the upper resin layer and the lower resin layer has an excellent cutting characteristic and conductivity and functions as an electrode.

2. An ultrasonic probe comprising an ultrasonic vibration element constructed by a 1-3 or 2-2 type composite piezoelectric member including a piezoelectric member formed of solution-based single-crystal containing at least plumbum titanate, and at least one of an upper resin layer formed on an upper surface of the piezoelectric member and having smaller acoustic impedance than the piezoelectric member, and a lower resin layer formed on a lower surface of the piezoelectric member and having smaller acoustic impedance than the piezoelectric member, wherein

the at least one of the upper resin layer and the lower resin layer has an excellent cutting

characteristic and conductivity and functions as an electrode.

3. The probe according to claim 2, wherein the at least one of the upper resin layer and the lower resin layer has acoustic impedance of 2×10^6 g/m^2 to 10×10^6 g/m^2 and functions as an acoustic matching layer.

4. A method of manufacturing an ultrasonic probe, comprising:

a first step of forming a resin layer on at least one of upper and lower surfaces of a single-crystal piezoelectric member, the resin layer having smaller acoustic impedance than the single-crystal piezoelectric member;

a second step of cutting the single-crystal piezoelectric member and the resin layer, thereby to form a plurality of kerfs; and

a third step of filling the plurality of kerfs with resins.

5. The method according to claim 4, wherein the plurality of kerfs are formed like a grid in the second step.

6. The method according to claim 4, further comprising a fourth step of polishing the resin layer to remove the resin layer.

7. A method of manufacturing an ultrasonic probe, comprising:

a first step of adhering a plurality of

single-crystal piezoelectric members to a resin sheet;

a second step of cutting the piezoelectric single-crystal members and the resin sheet, thereby to form a plurality of kerfs; and

a third step of filling the plurality of kerfs with resins.

8. An ultrasonic probe comprising:

a plurality of piezoelectric members formed of solution-based single-crystal containing at least plumbum titanate, and arranged like an array;

a first electrode formed on a lower surface of each of the piezoelectric members; and

a first flexible printed wiring board having a plurality of pattern wires each having a width smaller than a width of each of the piezoelectric member in an array direction, for leading and connecting an electric wire from each of the first electrode to an ultrasonic diagnosis apparatus body.

9. The ultrasonic probe according to claim 8, further comprising:

a second electrode formed on an upper surface of each of the piezoelectric members; and

a second flexible printed wiring board having a plurality of pattern wires each having a width smaller than a width of each of the piezoelectric member in an array direction, for leading and connecting an electric wire from each of the second electrode to GND.

10. A method of manufacturing an ultrasonic probe, comprising:

a first step of adhering a flexible printed wiring board and a single-crystal piezoelectric member to each other, the flexible printed wiring board having conductive layers each having a predetermined width, which are patterned in parallel on a resin member; and

a second step of cutting the flexible printed wiring board and the single-crystal piezoelectric member together, along and between the conductive layers, thereby to form a piezoelectric vibration element array having a pitch width than the width of each of the conductive layers.